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November 2005

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Report prepared for TAVCO by the City  
of Tempe, 255 East Marigold Lane,  
Tempe AZ 85281

# Noise


## Mitigation Monitoring Report


### Hot Button Issues!

Most compliant airline this month:

 ***Continental Express***

p. 7

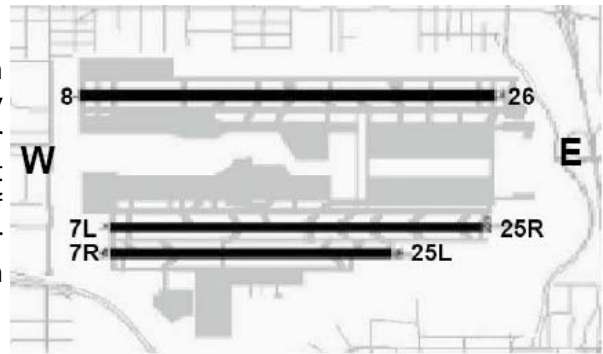
 The FAA' reveals why the side step  
visual approach to Runway 25L at Sky  
Harbor was suspended in 2002, p. 4

 TAVCO is asking for a FOIA to the  
FAA to get side step documents, p.9

## 1. Introduction

This report is assembled for the Tempe Aviation Commission (TAVCO) to monitor the monthly compliance of operations at Phoenix Sky Harbor International Airport with certain noise mitigation flight procedures over the City of Tempe. TAVCO consists of 13 Tempe residents appointed by the Tempe Mayor with approval of the City Council to assist and advice on aviation noise and other issues relating to the Phoenix Sky Harbor International Airport. The

City of Tempe is located directly east of the Phoenix Sky Harbor International Airport. The airport has 3 parallel runways and is owned and operated by the City of Phoenix.



### The IGA on Noise Mitigation Flight Procedures

In 1994 the City of Phoenix and the City of Tempe agreed to continue noise mitigation flight procedures already in use over Tempe:

- Have jets and large aircraft depart to the east over the Salt River;
- Equalize the noise burden from jets and large aircraft departures between east and west during daytime and nighttime hours on an annual basis.

The agreement also introduced a new procedure for mitigation noise from arriving aircraft:

- Make use of a side-step maneuver to land jets and large aircraft on the new third runway (25L) from the east. The City of Tempe had prior to the agreement challenged the plans for the construction of a third runway because of inadequate assessment of the environmental impacts, and agreed to settle the legal challenge in exchange for an Intergovernmental Agreement (IGA) on noise mitigation flight procedures with the City of Phoenix<sup>1</sup>.

### The Phoenix Sky Harbor International Airport part 150 Noise Compatibility Study

The City of Phoenix also agreed to submit an update to the F.A.R. Part 150 Noise Compatibility Plan and Program for the Phoenix Sky Harbor International Airport to the FAA no later that start of operation on the new 3<sup>rd</sup> runway. The completed update of September 2000 was sent to the FAA for approval after being approved by the Phoenix Advisory Aviation Board and the Phoenix City Council. Prior to updating the elements of the plan, the FAA had reviewed new noise exposure contour map forecasts that the City of Phoenix had completed in March of 2000. The FAA announced that it had received the September 2000 study in March 2001, and approved it in October of 2001 with effective date September 7, 2001. Inaugural flights from the 3<sup>rd</sup> runway started October 5, 2000, after which the airport closed the runway temporarily to complete installation of runway lights. A few weeks later the 3<sup>rd</sup> runway was in regular use. The September 2000 update included the following recommendations on noise mitigation flight procedures to the east:

- Continue the runway use program calling for the equalization of departure operations to the east and west both daytime and nighttime.
- Continue the 4 DME departure route procedure which overflies the Salt River by all jets and large propeller aircraft departing Runways 8 and 7L
- Implement the 4 DME departure route procedure for all jets and large propeller aircraft departing Runway 7R.
- Establish a side-step approach to Runway 25L for noise abatement.

The study also recommended directing (smaller) propeller aircraft departing Runway 7R to turn to a 120 degree heading upon reaching the end of the runway to concentrate traffic over commercial/industrial corridor of Interstate 10 southeast of the airport.

<sup>1</sup> Maricopa Recorder: 9/28/1994, reference number 94-0706551



## The 4-DME procedure

### The 1993 Environmental Impact Statement (EIS)

According to the 1993 EIS, which among other planned improvements included the construction of a third runway, departures to the east from the new runway would follow the so-called "One-DME" Standard Instrument Departure procedure (SID) similar to the SID already in use by aircraft departing to the east from the airport<sup>2</sup>.



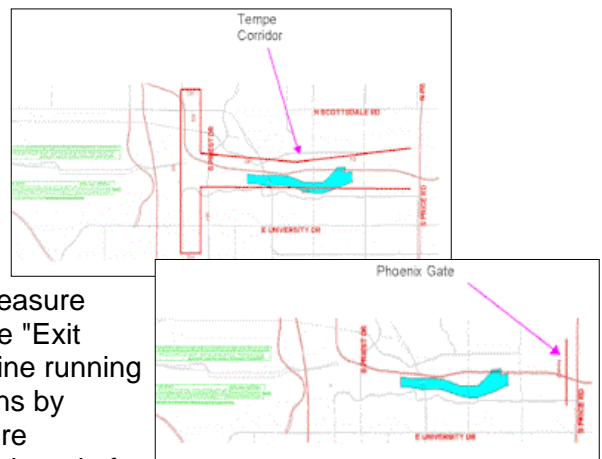
North Runway 8L (Now 8): "Fly heading 085° to intercept PHX-075, across PXR R-350 at or below 3,000'. At 4 DME east of PHX VORTAC, turn right/left"  
Center Runway 8R (Now 7L): "Fly direct PHX VORTAC, cross PHR at or below 3,000'. Proceed via PHX R-075 to 4 DME east, turn right/left" (FAA SW-1 of August 10, 2000)

### The 1994 Record of Decision

The continued use of the "One-DME procedure" was also stated in the Record of Decision (ROD) for the final EIS, where the FAA approved the 1989 master plan update that included the plans for a third runway. When Phoenix and Tempe signed the Intergovernmental Agreement (IGA) on noise mitigation flight procedures over Tempe, the FAA reaffirmed its commitment to uphold these procedures<sup>3</sup>. The "One-DME procedure" became the "4-DME procedure" when a navigational aid (VORTAC) was moved closer to the airport.

### Measure for Departure Procedure Compliance

Based on the 4-DME Standard Instrument Departure procedure (SID) TAVCO proposed a corridor over the river bed of the Salt River to measure how jet aircraft and large turboprop aircraft<sup>4</sup> complied with the "4-DME procedure" using the Noise and Flight Track Monitoring System that Phoenix had agreed to install. This proposal was adopted by the Tempe City Council, but was rejected by the City of Phoenix. The airport use a vertical line to measure compliance of jet departures called the "4-DME Gate" or the "Exit Window Only Gate", which is a 5,500 feet long imaginary line running north south at 4-DME or approximately at Price Road. Turns by carrier jets north or south away from the Salt riverbed before reaching this line, or failures to stay inside the north or south end of this line are registered and in a compiled format submitted to the airlines in a "Notice of Deviation" letter from the airport administration. Deviations influenced by local weather conditions are excluded from the notification procedure<sup>5</sup>.



<sup>2</sup> Source: Final Environmental Impact Statement Phoenix Sky Harbor International Airport Master Plan Update Improvements, November 1993, Section 5.

<sup>3</sup> The FAA made an amendment dated September 13, 1994 to the original ROD of January 18, 2004, where it reaffirmed its commitment to noise mitigation measures described on page 15 in the original ROD.

<sup>4</sup> Aircraft certified and operated according to Title 14 FAR Part 121 or 135 with gross weight exceeding 12,500 pounds

<sup>5</sup> Copy of Last Notice of Deviation notification received by the City of Tempe was dated November 2, 2005, due to staffing changes in the Phoenix Aviation Department.

This report compares departure compliance using the Tempe Corridor and the Phoenix "4-DME Gate" or "Exit Window Only Gate", and for the Tempe Corridor measure includes large turboprop aircraft because they are part of the 1994 agreement. Since the implementation of the "4-DME Gate" deviation standard for large carriers in 1997, the main issue of concern has been how well these aircraft on departure from Phoenix Sky Harbor International Airport to the east keep to the Salt riverbed and avoid flying over populated areas in Tempe.

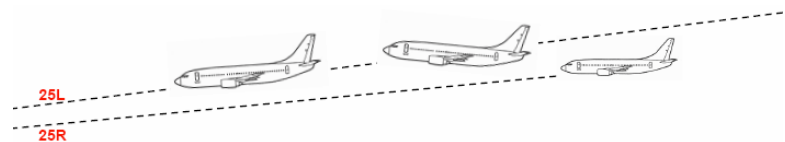
### The "Side Step" procedure

This is a noise mitigating procedure for jets and large turboprop aircraft that approach Phoenix Sky Harbor International Airport from the east to land on the third runway, Runway 25L.



Upon clearance from PHX air traffic control the pilot would stay on the approach path to the center runway, Runway 25R, until approximately 3 NM from the runway end or abeam Sun Devil Stadium at Mill Avenue in Tempe when the pilot would direct the aircraft from a stabilized approach to the center runway towards the left and line up for landing on Runway 25L. The side step procedure intended to keep large aircraft approaches over the river bed as long as possible before they close in towards neighborhoods in downtown Tempe south of the riverbed. However, on March 27, 2002 the FAA suspended implementation of a charted "side step" procedure because of flight safety concerns. Presently the FAA is clearing jets and large turboprop aircraft for straight-in approaches to Runway 25L from the east. The FAA has indicated to TAVCO that there were 4 contributing factors that led to negative effects on flight safety and the decision to suspend the side step procedure:

1. The destabilizing effect on the approach.
2. The inability to intercept the glide slope for the third runway.
3. Computer reprogramming going on in the cockpit.
4. Loss of visual reference, particularly at night (Sun Devil Stadium not always being lit).



Because the threshold for Runway 25L is located farther west than the threshold for Runway 25R, the glide slope is higher up than the glide slope to Runway 25R. Using the Runway 25R glide slope a pilot would need to apply power and both turn and climb close to landing to intercept the glide slope for Runway 25L when executing the side step maneuver.

### The Departure Split (Equalization)

This procedure attempts to disperse evenly on an annual basis the noise impact of eastbound and westbound jet and large turboprop aircraft departures between Tempe and Phoenix during day and nighttime hours.



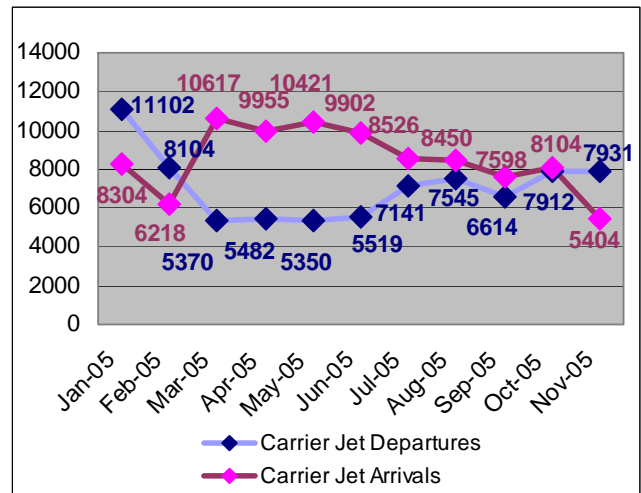




## 2. Aircraft Operations

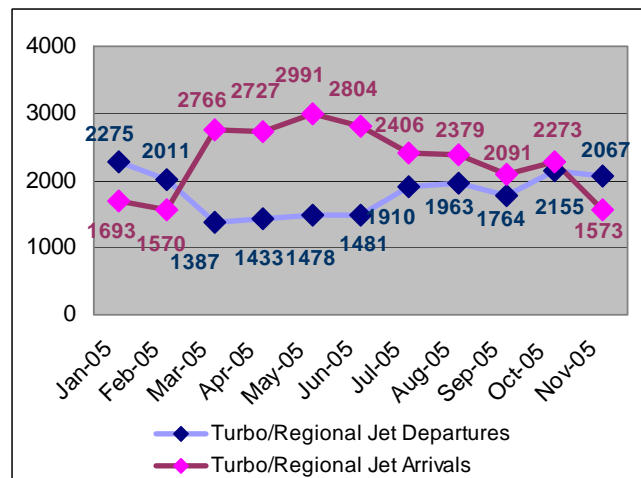
### Carrier Aircraft

The number of large carrier jets departing to the east during the month of November 2005 increased 0.2% compared to October 2005. Carrier arrival operations from the east towards the west decreased 33.3% compared to operations in October 2005.

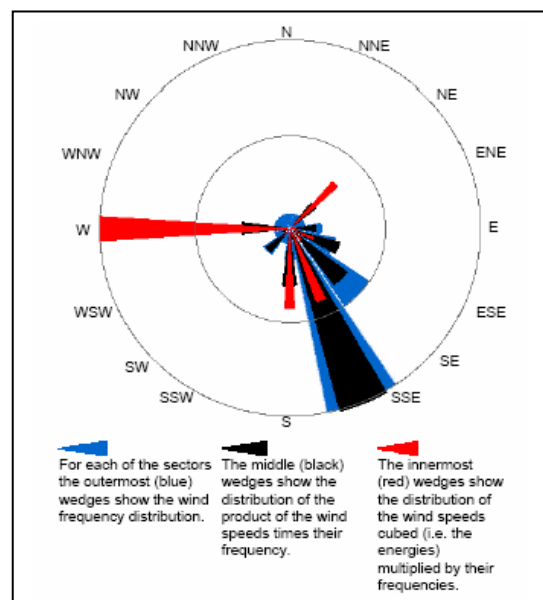


### Regional Jets & Large Turboprop Aircraft

Regional jets and large turboprop departures towards the east decreased 4.1% in November 2005 compared to October 2005. The number of regional jets and large turboprop aircraft arriving from the east decreased by 30.8% compared to the previous month.



Of all jet and large turboprop departures to the east, 94 departures or 0.9% occurred between 0:00 and 6:00 a.m. 96 or 1.3% of all jet and large turboprop arrivals from the east occurred between these early hours.

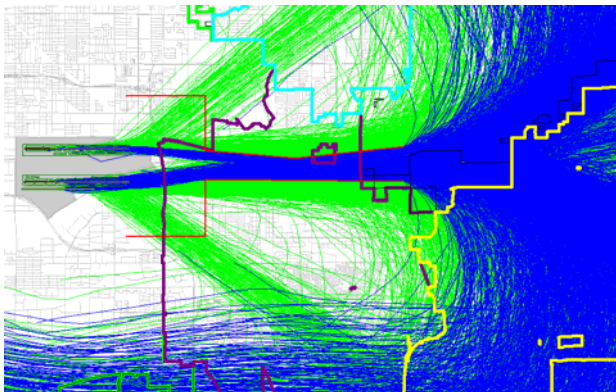


Moderate winds mainly from the southeast with speeds up to moderate breeze, 11.1 mph, 11/27/2005 at 3:00 PM.

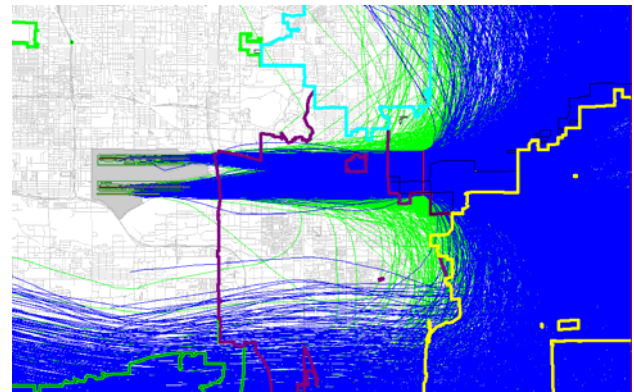
### 3. Departure Compliance

#### Compliance Rates

Including the large turboprop aircraft, which routinely are routed on approximate departure angles of 120° towards the southeast and 60° towards the northeast, **56.3%** of all jet and larger turboprop aircraft departures to the east complied with the Tempe Corridor during the month of November 2005. 95.7% of the jets complied with the Phoenix 4 DME gate. Departures by large turboprop aircraft are not included in the Phoenix gate compliance rate.



Flight tracks inside the Tempe Corridor are depicted in blue.



Flight tracks inside the Phoenix Gate are depicted in blue.

Carrier	ICAO Code	%	Carrier	ICAO Code	%	Carrier	ICAO Code	%
American Airlines	AAL	32.3	Continental	COA	65.0	Northwest Airlines	NWA	49.5
Airborne Express	ABX	40.0	Custom Air Transport	CTT	100.0	Omni Air Express	OAE	0.0
Air Canada	ACA	57.1	Casino Express	CXP	0.0	Flight Options	OPT	38.7
Ameristar Jet Charter	AJI	0.0	Delta Airlines	DAL	33.7	Pace Airlines	PCE	64.3
Ameriflight	AMF	100.0	DHL Airways	DHL	72.7	Pacific Jet	PCJ	0.0
American Trans Air	AMT	72.3	East Coast Jets	ECJ	100.0	Air Mobility Command	RCH	100.0
Aero Mexico	AMX	47.6	Executive Jet Aviation	EJA	42.4	Sun Country Airlines	SCX	62.1
Alaska Airlines	ASA	58.4	Executive Jet Management	EJM	100.0	Sky West	SKW	63.4
Mesa Airlines	ASH	52.4	Federal Express	FDX	48.9	Southwest Airlines	SWA	57.9
Empresa	ASP	100.0	Frontier Airlines	FFT	50.0	Swift Air	SWQ	23.1
Air Transport International	ATN	0.0	Citation Chares	FIV	30.0	TAG Aviation	TAG	42.9
America West	AWE	63.1	FINFO Flight Inspection	FLC	100.0	United Airlines	UAL	71.6
British Airways	BAW	28.6	Hawaiian Airlines	HAL	54.2	Universal Jet Aviation	UEJ	0.0
Miami Air	BSK	0.0	JetBlue	JBU	42.9	United Parcel Service	UPS	53.2
Continental Express	BTA	79.2	Kalitta	KFS	0.0	US Airways	USA	26.8
Atlantic Southeast	CAA	50.0	Kitty Hawk Air Cargo	KHA	58.3	US Check Airlines	USC	48.6
Capital Cargo International	CCI	50.0	Flexjet	LXJ	0.0	Westjet Airlines	WJA	55.6
Champion Air	CCP	0.0	Midwest Express	MEP	60.0			
Sunwest Home Aviation	CNK	100.0	GA	N	37.9			

Departures excluded<sup>6</sup>

11/1/2005 7:30 - 11:00 p.m.	11/18/2005 5:00 a.m. - 2:00 p.m.
11/16/2005 8:00 a.m. - 3:00 p.m.	11/20/2005 2:00 a.m. - 2:00 p.m.

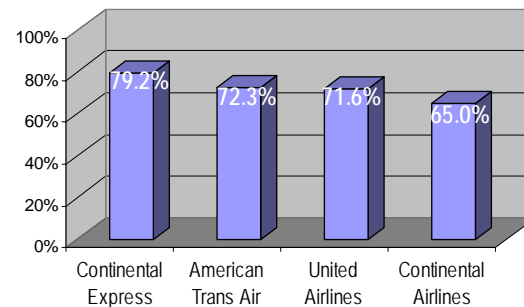
<sup>6</sup> Based on City of Phoenix evaluations of weather influencing navigation east to 4DME.



### Top Airlines

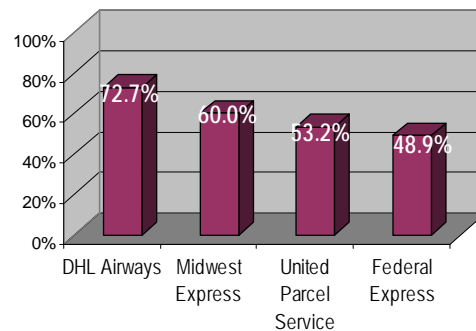
Among the airlines with 10 or more departures to the east during the month of November 2005, only 3 had 70% or more of their aircraft stay within the Tempe Corridor. This is quite lower than last month when the top 4 had from 79% to 83% of their aircraft in compliance with the Tempe Corridor.

**November 2005 Carrier Compliance**



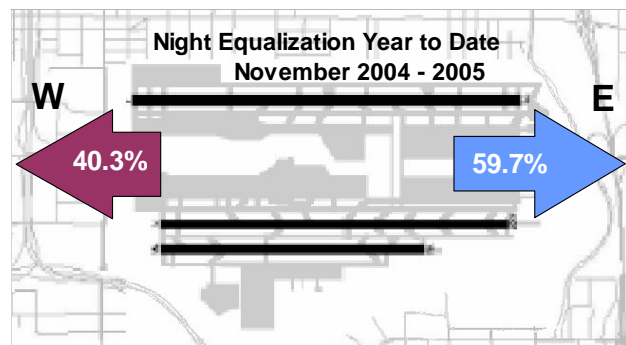
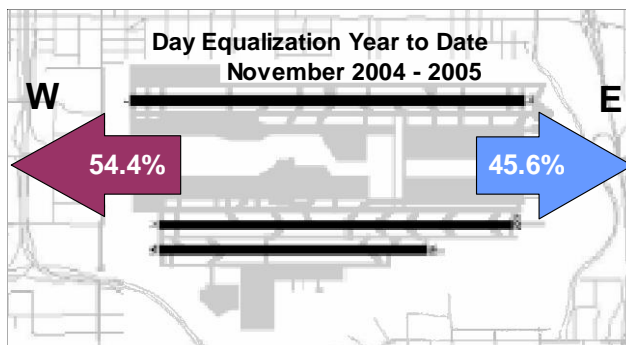
The compliance rates for the top all cargo airlines with more than 10 departures to the east during the month of November 2005 were somewhat better than the October numbers, when compliance rates ranged from 48 to 67%. For October no deviations were excluded because of weather conditions.

**November 2005 All Cargo Carrier Compliance**



## 4. East/West Departure Split

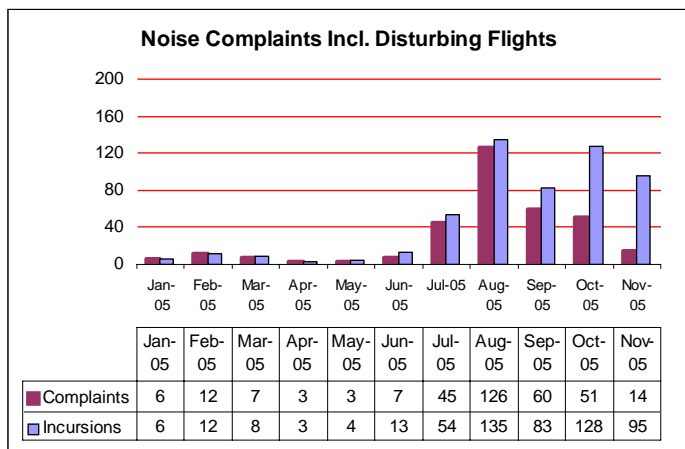
The split in jet and large commuter aircraft departures to the east and west of the Phoenix Sky Harbor International Airport is generally not as favorable for Tempe during the nighttime hours compared to daytime hours. As of November 2005 59.7% of all nighttime and 45.6% of all daytime departures by jet and large turboprop aircraft have gone towards the east since November 2004.



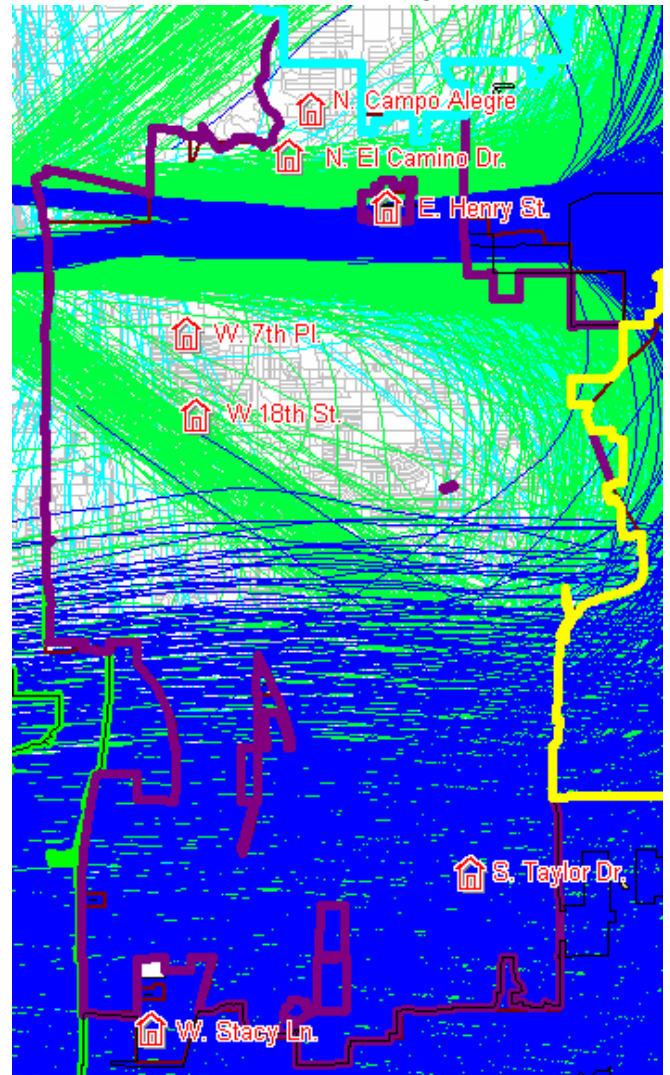
Day and nighttime departures are generated by a query covering day + evening hours and nighttime hours. Day = 7: 00 a.m. to 9:59:59 p.m. local time and Night = 9:59:59 p.m. to 7:00 a.m.

## 5. Complaints

The City of Tempe started registering aircraft noise complaints from Tempe residents in October 2000 after the opening of the third runway at Phoenix Sky Harbor International Airport. During October 2005, 7 residents filed 51 noise complaints with the City of Tempe, 2 coming from the same household. 68% of the complaints dealt with annoying arrivals, and 32% disturbing departure operations, some making early deviations from the Salt riverbed and several morning departures causing problems for Tempe residents, e.g. lack of sleep. Copies of replies given to noise complaints from a south Tempe resident to the PHX TRACON manager were received. These complaints are included in this month's complaint numbers. One issue raised by the resident dealt with observed shift in the general downwind flight paths a mile south from Baseline Road to Elliot Road on west flow.



Green flight tracks = Departures outside the Tempe Corridor  
 Blue flight tracks = Departures inside the Tempe Corridor  
 Turquoise flight tracks = Arrivals  
 Address of resident that filed complaints =







## 7. Unresolved Issues

- Review of the FAA's suspension of the "Side-step", landing procedure.

At the November meeting TAVCO members received information from the PHX TRACON manager about why the implementation of the procedure was suspended, see p. 4. TAVCO has asked the City of Tempe to make a Freedom of Information Act Request to get access to FAA documents dealing with the side step suspension in 2002 and the implementation of current straight-in visual approach procedures to the third runway.

- A new Noise Study for Sky Harbor

TAVCO has also recommended that the City Council formally support the City of Phoenix with regards to having a new noise study done for Sky Harbor, and emphasized the need for updating the existing Part 150 noise exposure map for the airport. In July TAVCO suggested forming a discussion group with Phoenix where representatives that include members from both Councils can come together and discuss aviation, the benefits and challenges it brings to our communities.

- Difference between Tempe's "4 DME corridor" and Phoenix's "4 DME Gate", p. 3